

## Phytoplankton Ecology

TINY DRIFTING OCEAN PLANTS CALLED PHYTOPLANKTON FUEL ALL LIFE IN THE SEA, FORMING THE FOUNDATION OF THE FOOD WEB.

While the Board has not funded projects that focus solely on phytoplankton ecology, it has funded projects that measure phytoplankton abundance through fluorescence and relate it to changes in the surrounding ocean environment, such as the southeastern Bering Sea moorings and along the Seward Line. These studies improve our understanding of the timing of the spring bloom and in the case of the Bering Sea moorings, how the initial onset of phytoplankton production relates to the presence or absence of sea ice on the Bering Sea shelf. The timing of these blooms is important to the Bering Sea's food web.

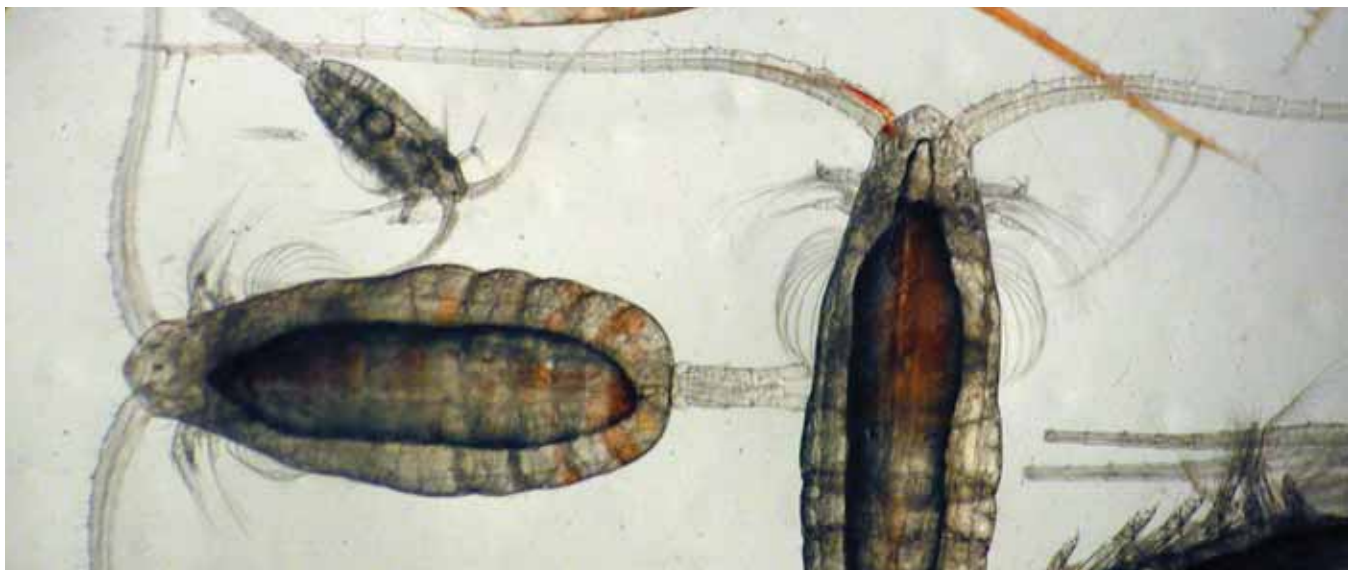
A current scientific paradigm suggests that water column grazing by mesozooplankton has very little impact on ice-edge blooms in the northern Bering Sea. Most of the primary production sinks and becomes an important food source for the benthos. In the southern Bering Sea, later blooms feed the pelagic system. It also appears that middle shelf blooms in the Bering Sea are grazed less than those on the outer shelf, thus enhancing the benthic food supplies. Nutrient measurements have shown that both the ice-associated bloom and the more typical spring bloom strip the upper water column of nutrients. In November, when the strong summer thermocline breaks down, a fall bloom is signaled by an increase in fluorescence.

## Zooplankton Ecology

MINUTE ANIMALS KNOWN AS ZOOPLANKTON REPRESENT THE SECONDARY PRODUCTION LEVEL AT THE BASE OF THE FOOD WEB.

Because they have relatively short life spans, mostly a year or less, and have varying degrees of control over where they drift, zooplankton respond very quickly to changes in their environment. Poor conditions for zooplankton mean less food is available for larger animals. As a result, larger animals also have a poor year, go somewhere else or eat whatever else is available. We need to know more about

how zooplankton species respond to variability in ocean conditions. The Board has responded to this need in several ways – the zooplankton collections along the Seward Line; continuous plankton recorder studies across the North Pacific; and zooplankton studies within the NPRB-NSF Bering Sea Integrated Ecosystem Research Program. The Board also funded several other smaller studies.



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